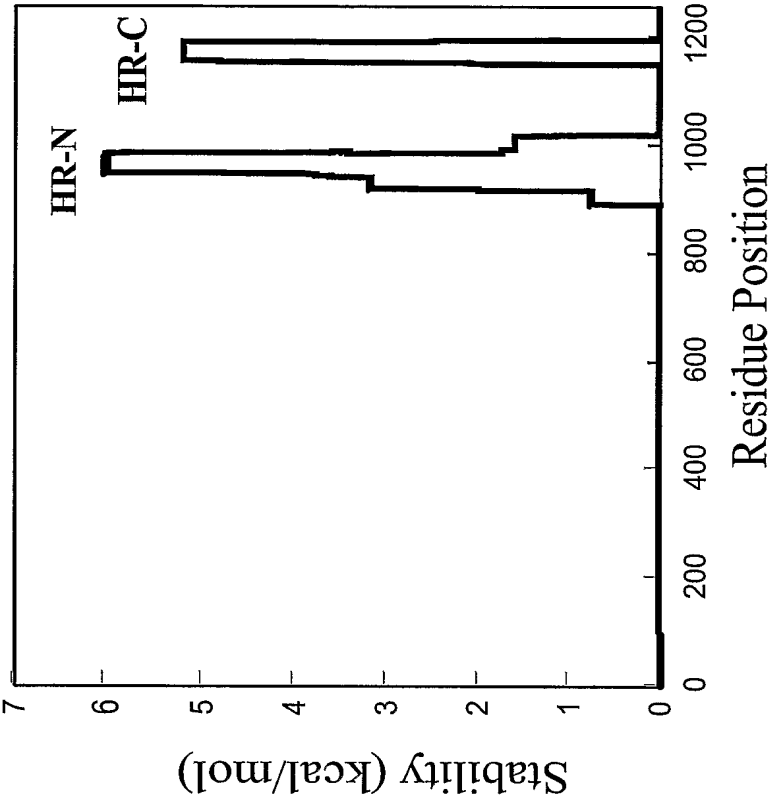


A



B

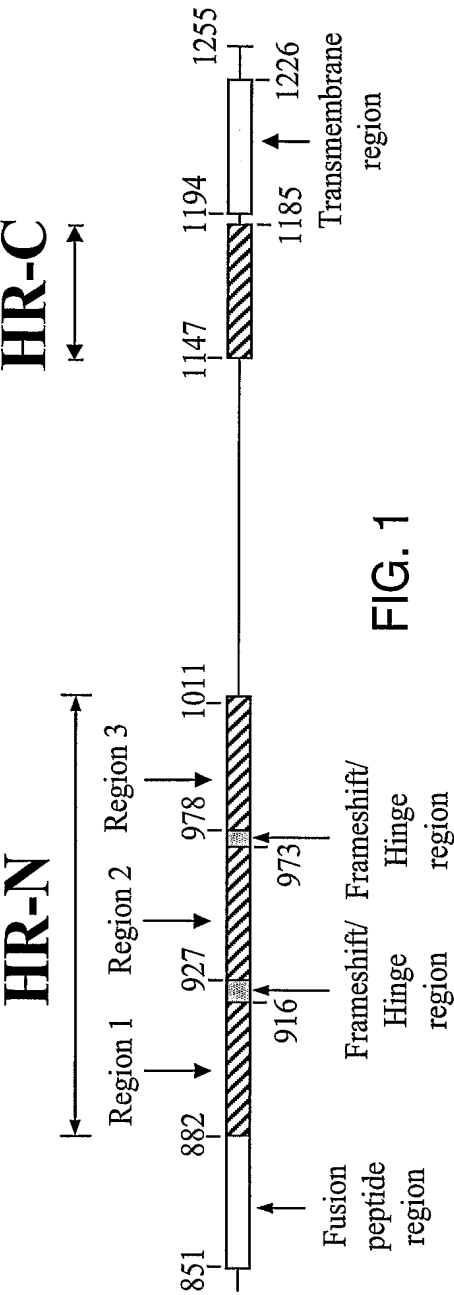


FIG. 1

HR-N

882 | d a d a d a d a d a d a d a d a d a
916 |
MOMAYRFNGIGVTONVLYENQKQIANQFNKAISQIQESLTTTSTALGKLQDVVNQAALNTLVKQLSSNFGAISSVLNDILSLDKVEAEV
973 |

974 | d a d a d a d a d a d a d a d a d a
1011 |
QIDRLITGRlQSLQTYVTQOLTRA AEIRASANIAATKM
a d a d a d a d a d a d a d a d a d a

882 1011

Peptide

HR-N1	(882-973)
HR-N2	(916-973)
HR-N3	(927-973)
HR-N4	(974-1011)
HR-N5	(882-916)
HR-N6	(888-922)
HR-N7	(895-929)
HR-N8	(902-936)
HR-N9	(909-943)
HR-N10	(916-950)
HR-N11	(923-957)
HR-N12	(931-965)
HR-N13	(938-972)
HR-N14	(945-979)
HR-N15	(952-986)
HR-N16	(959-993)
HR-N17	(966-1000)

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HR-C

1147 **HK-C** | a d a d a d a d | 1185
DLGDISGINASVVTQKEIDRINEVAKNLESIDLOEL

HR-C1	(1147-1185)
HR-C2	(1165-1185)
HR-C3	(1158-1185)
HR-C4	(1151-1185)

FIG. 2

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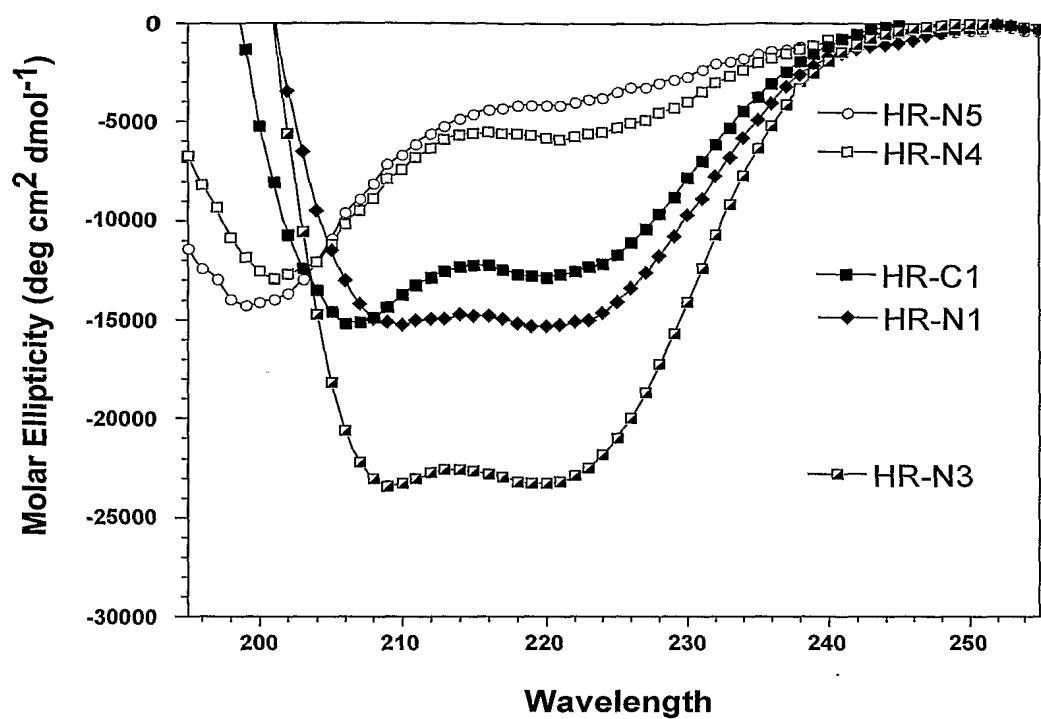
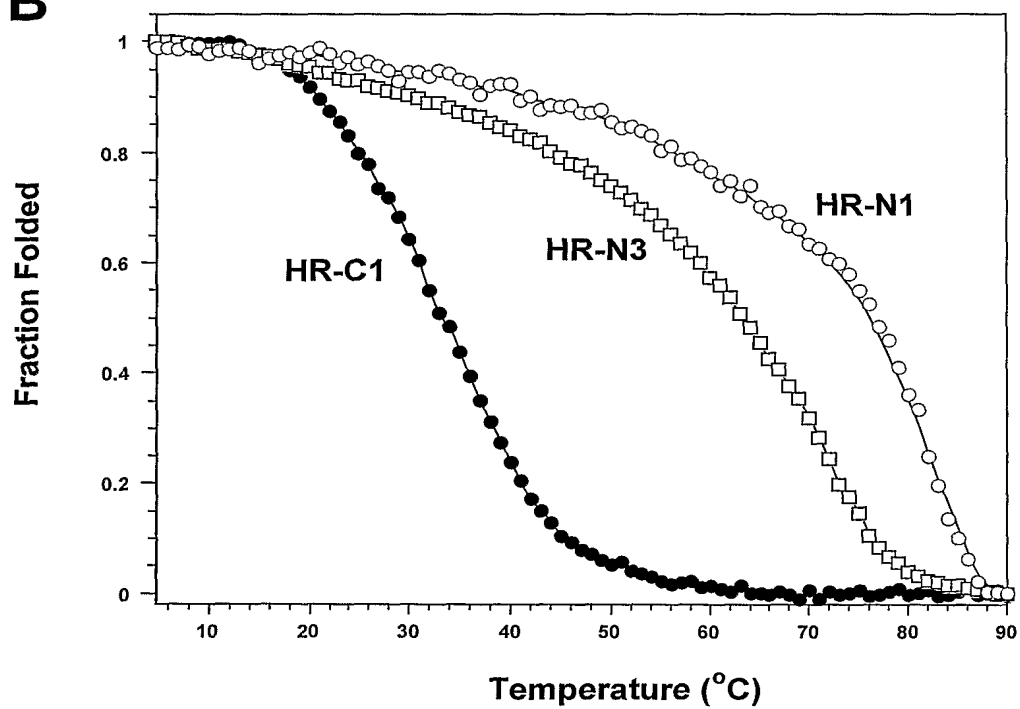
A**B**

FIG. 3

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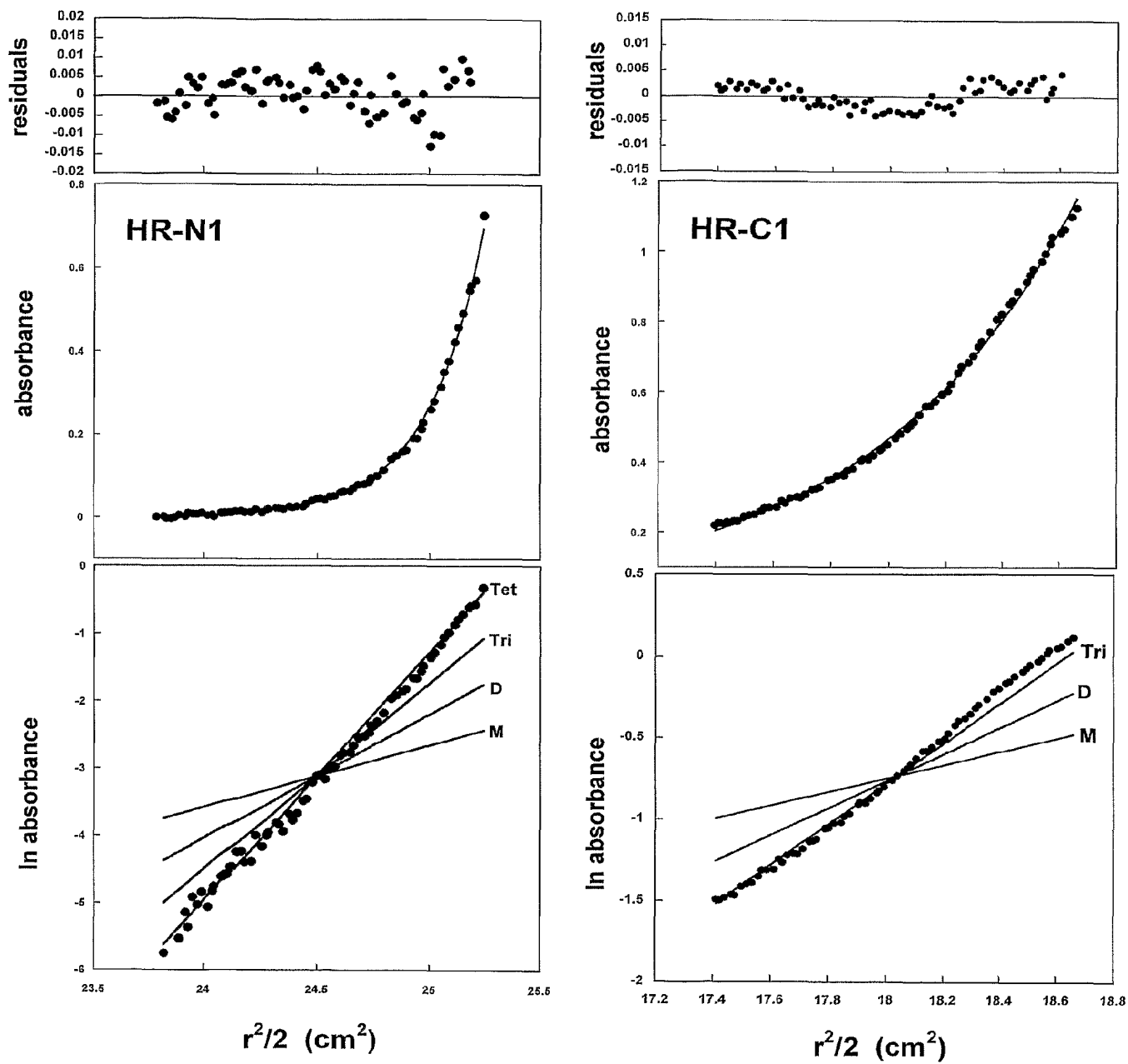


FIG. 4

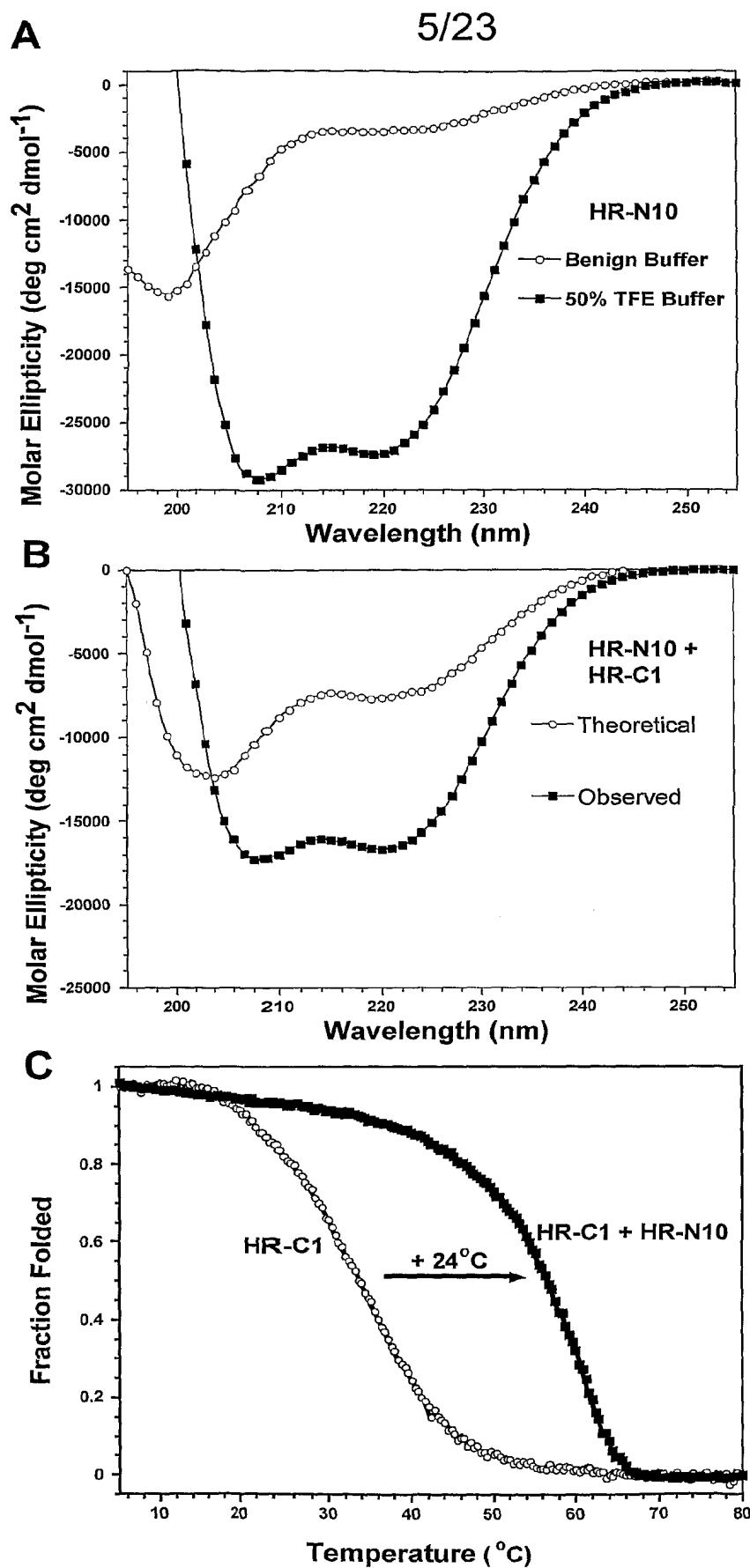


FIG. 5

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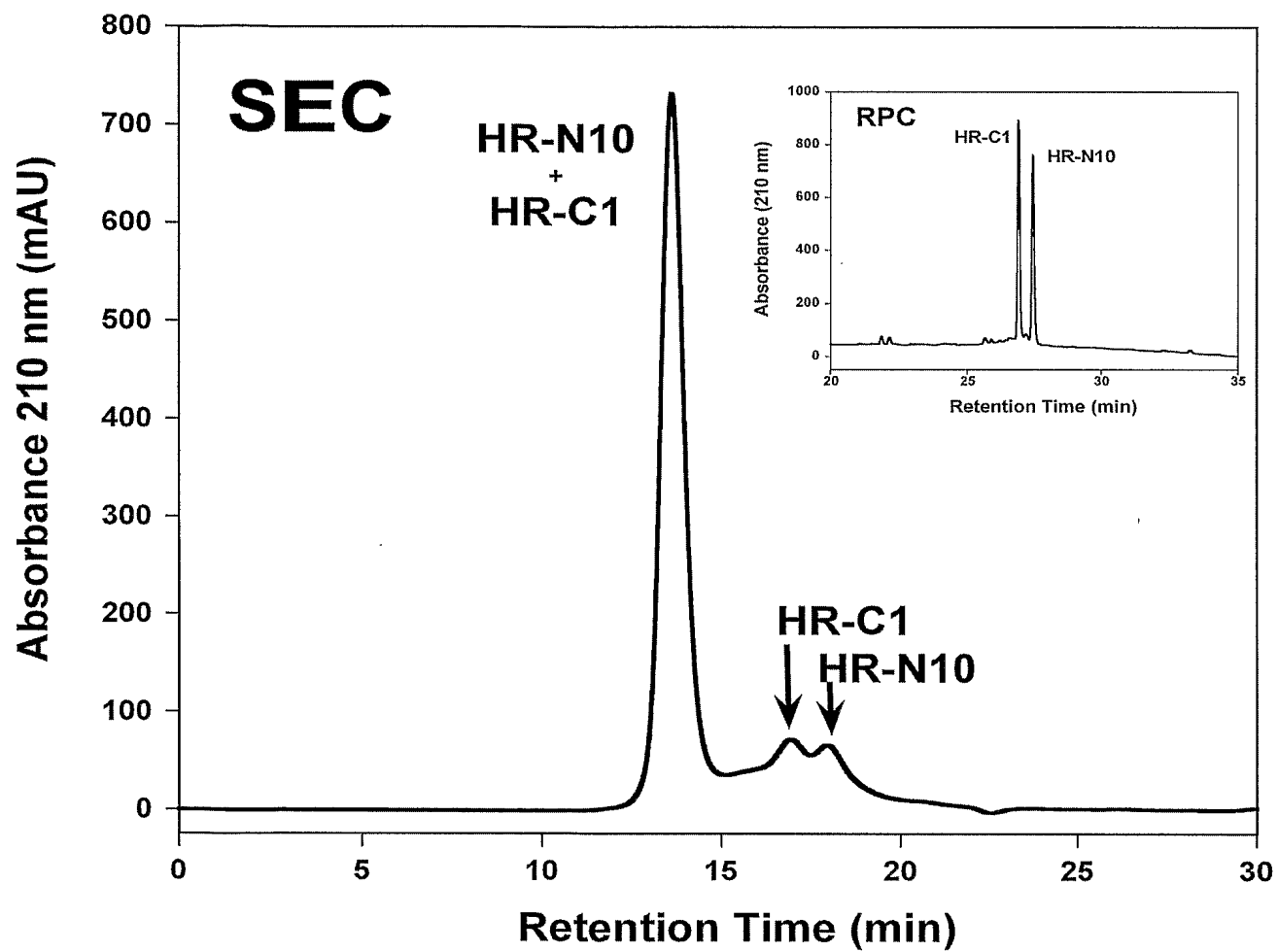


FIG. 6

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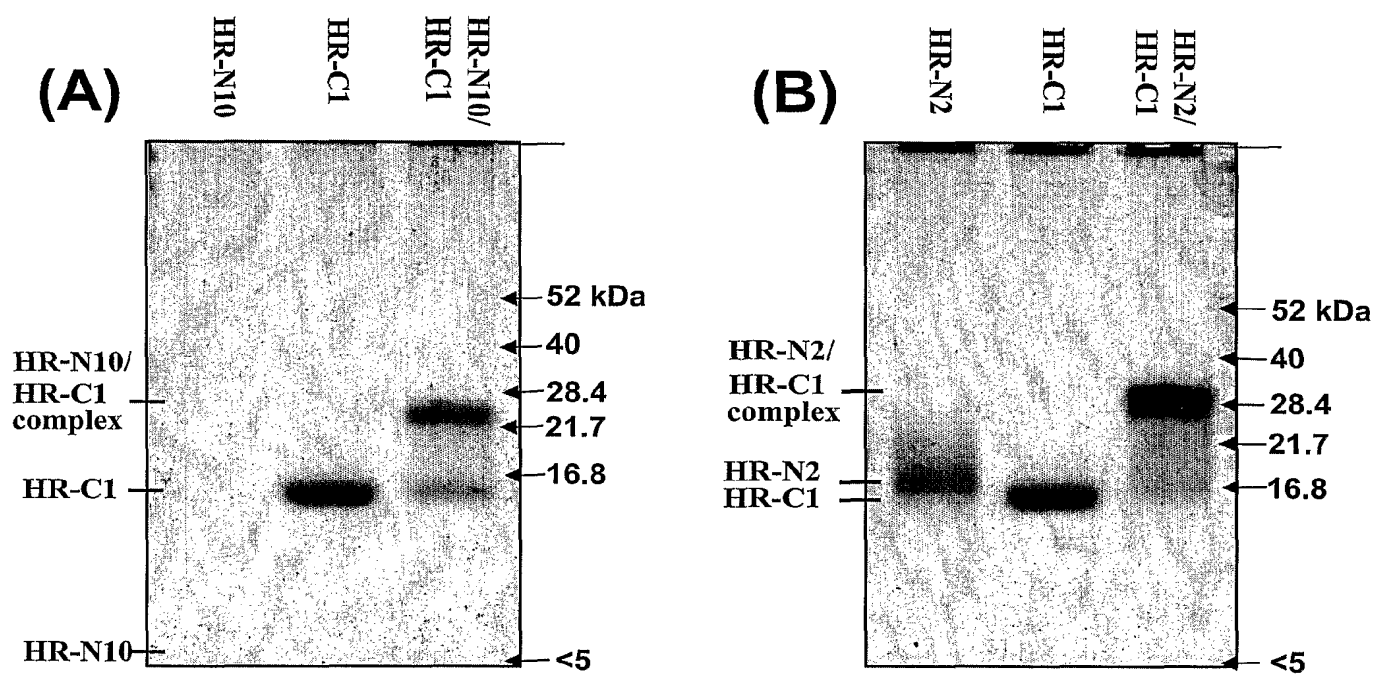


FIG. 7

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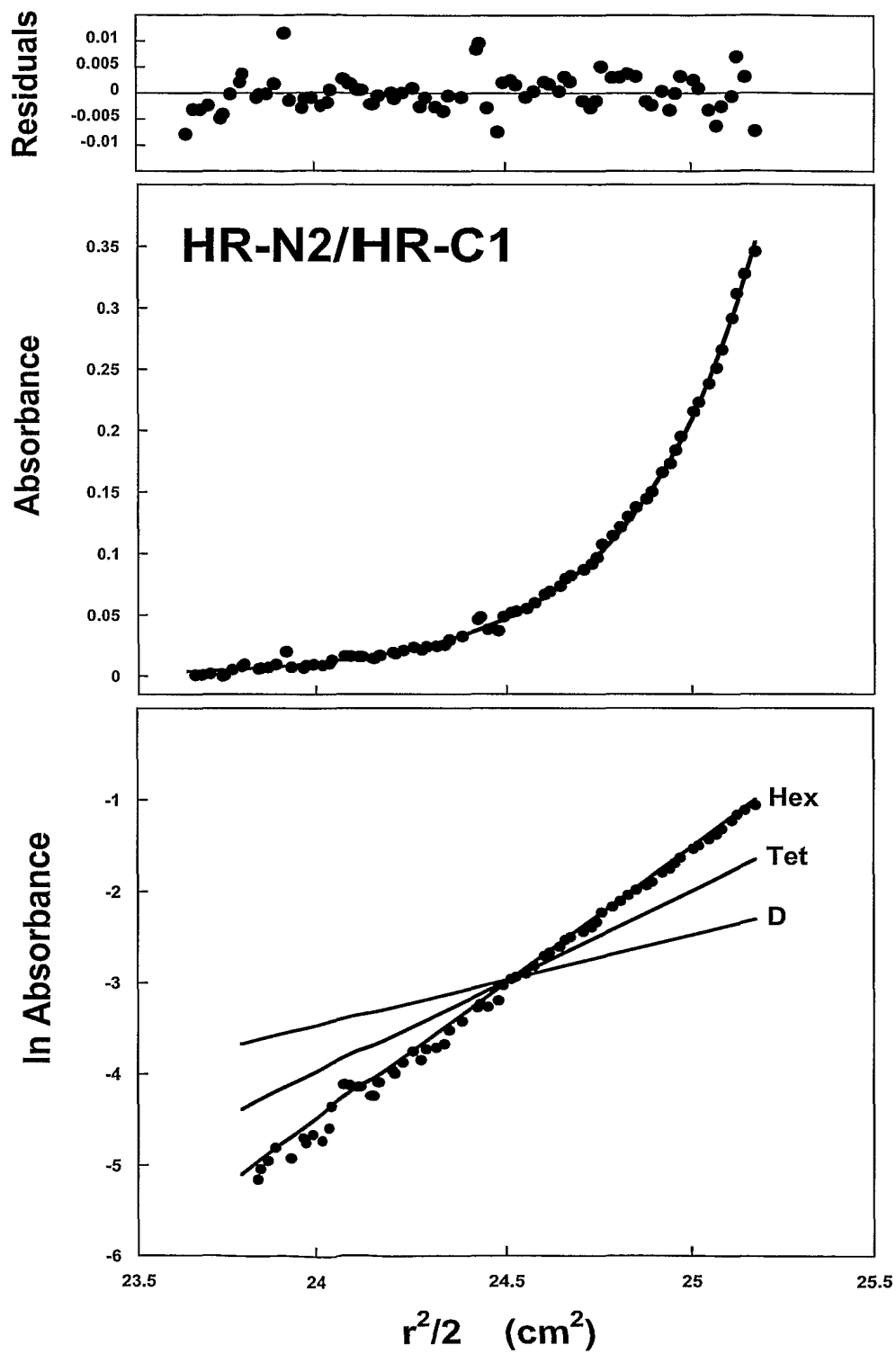


FIG. 8

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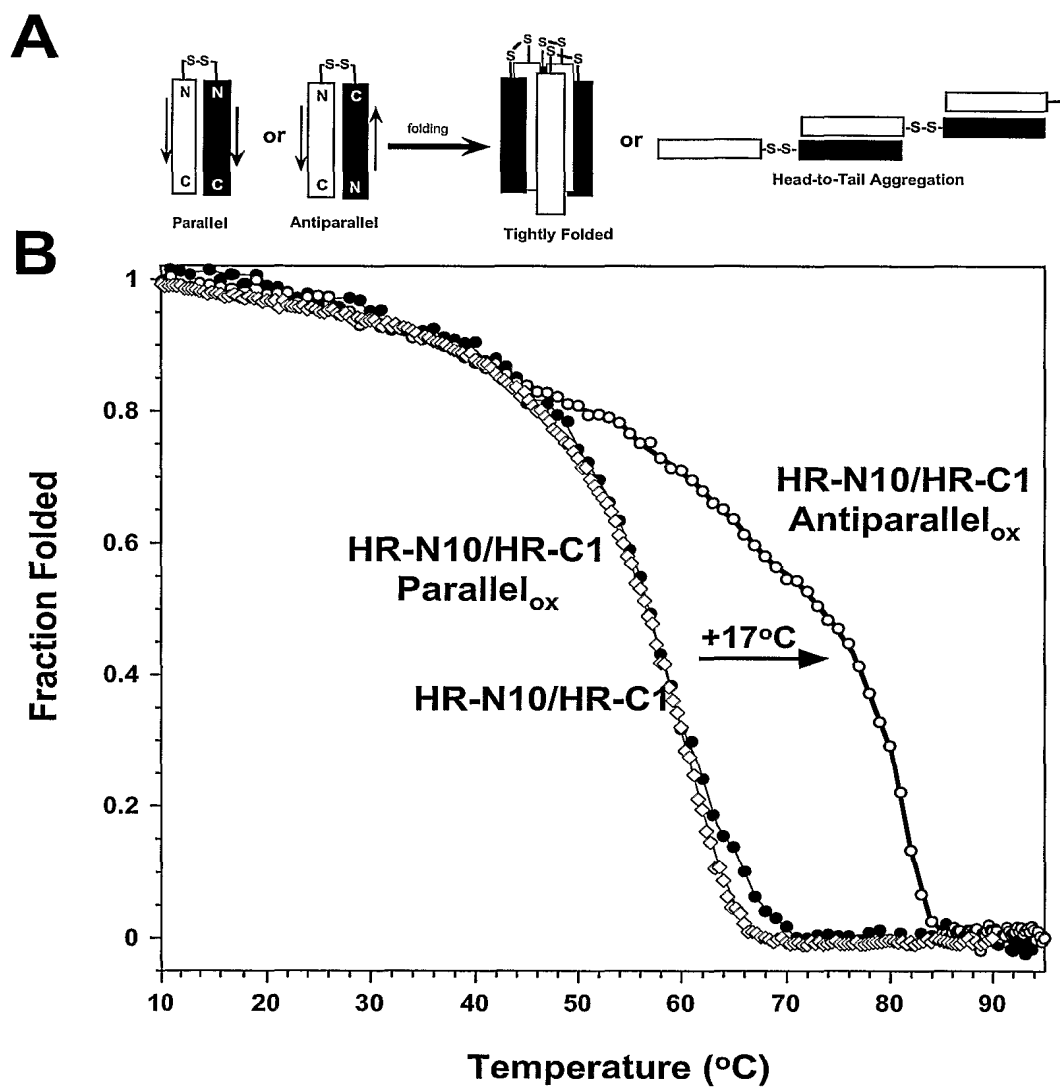


FIG. 9

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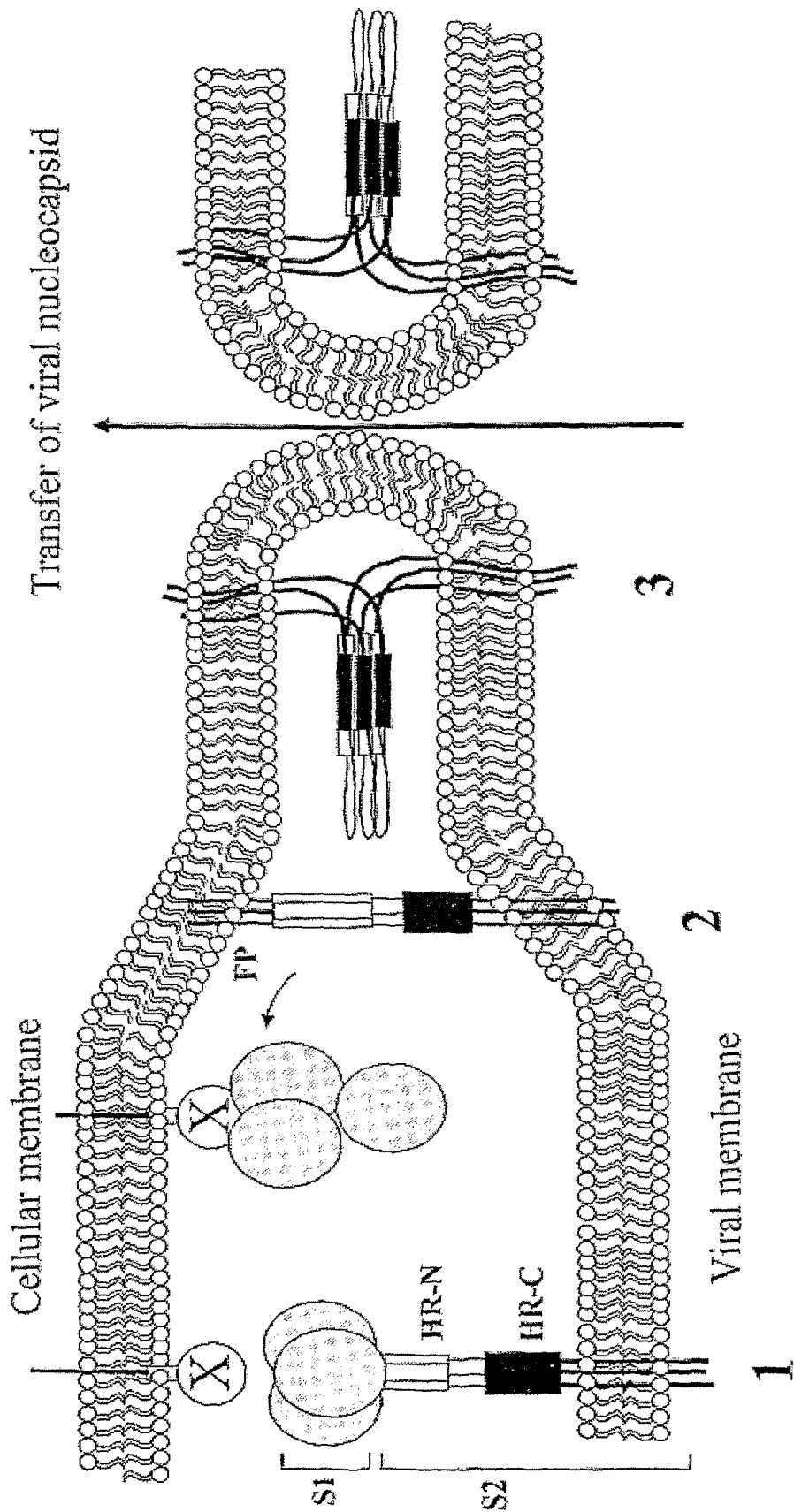


FIG. 10

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HR-N (916-950)

(native)

Ac-IQESLTTTSTALGKLQDVVNQNAQALNTLVKQLSS-amide

(Ala, Lys and Arg substituted)

Ac-IQAALTKTSAALGKLQAAVNRNAAALNKLVKALSS-amide

(Aib=B substituted)

Ac-IQESLTBTSTALGKLQDVVNBNAQALNBLVKQLSS-amide

(Dxg=Z substituted)

Ac-IQESLTZTSTALGKLQDVVNZNAQALNZLVKQLSS-amide

HR-C (1151-1185)

(native)

Ac-ISGINASVVNIQKEIDRLNEVAKNLNESLIDLQEL-amide

(Ala, Lys and Arg substituted)

Ac-IAAINKSVAAIQKEIARLNEVAKALNASLIRLQAL-amide

(Aib=B substituted)

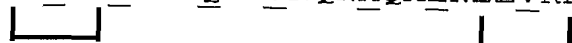


Ac-ISGINBSVVNIQKEIDRLNBVAKNLNBSLIDLQEL-amide

(Dxg=Z substituted)

Ac-ISGINZSVVNIQKEIDRLNZVAKNLNZSLIDLQEL-amide

FIG. 11

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HR-N (916-950)Ac-IQESLTTTSTALGKLQDVVNQNAQALNTLVKQLSS-amide**1 i,i+4 lactam bridge**Ac-IQESLTTTSTALGKLQEVVNKNAQALNTLVKQLSS-amide
**2 i,i+4 lactam bridge**Ac-IQESLTETSTKLGKLQDVVNQNAQALNELVKKLSS-amide
**1 i,i+7 bridge**Ac-IQESLTTTSTALGELQDVVNENAQALNTLVKQLSS-amide
**HR-C (1151-1185)**Ac-ISGINASVVNIQKEIDRLNEVAKNLNESLIDLQEL-amide**1 i,i+4 lactam bridge**Ac-ISGINASVVNIQKEIERLNKVAKNLNESLIDLQEL-amide
**2 i,i+4 lactam bridge**Ac-ISGINESVVKIQKEIDRLNEVAKNLNESLIKLQEL-amide
**1 i,i+7 bridge**Ac-ISGINASVVNIQEEIDRLNEVAKNLNESLIDLQEL-amide

 = covalent bond

FIG. 12

HR-N (916-950)

Ac-IQESLTTTSTALGKLQDVVNQNAQALNTLVKQLSS-amide

(Ile and Leu substituted into the hydrophobic core)

Ac-IIESLTTTITALGKLIDVLNQNIQALNTLVKILSS-amide

HR-C (1151-1185)

Ac-ISGINASVVNIQKEIDRLNEVAKNLNESLIDLQEL-amide

(Ile substituted into the hydrophobic core)

Ac-ISGINASIVNIQKEIDRLNEVIKNLNESLIDLQEL-amide

FIG. 13

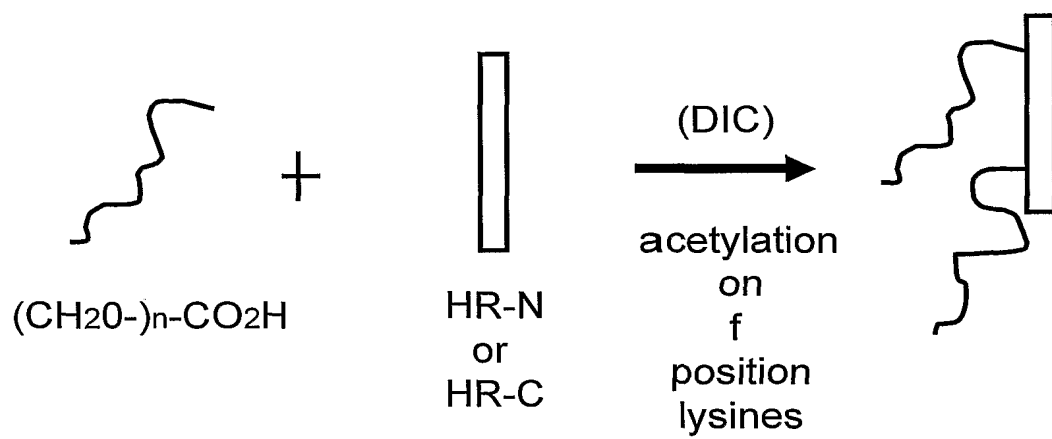


FIG. 14

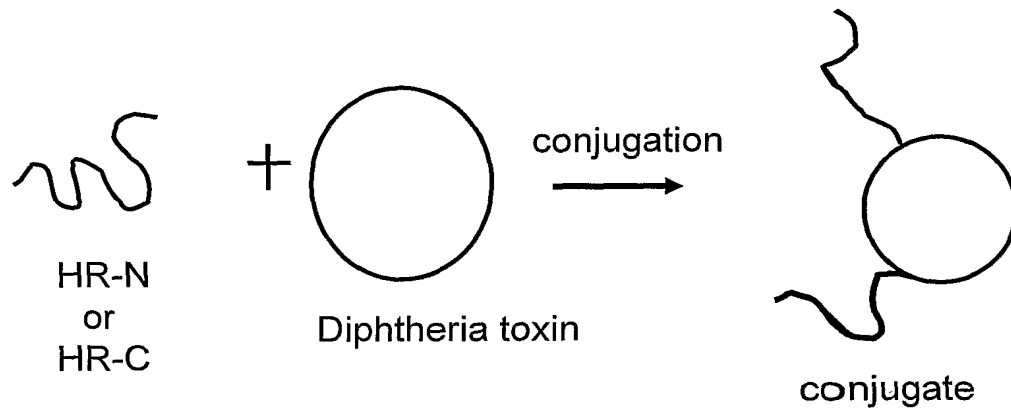


FIG. 15

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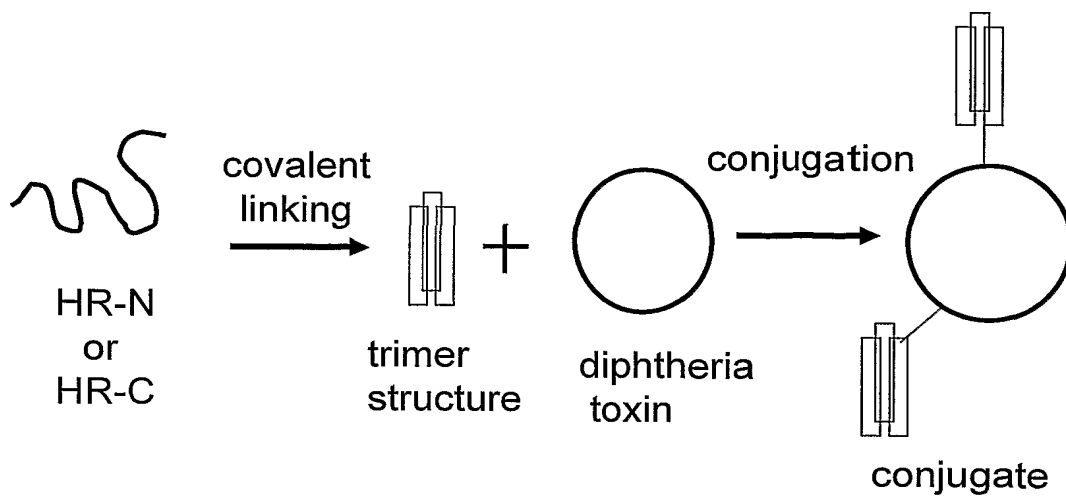


FIG. 16A

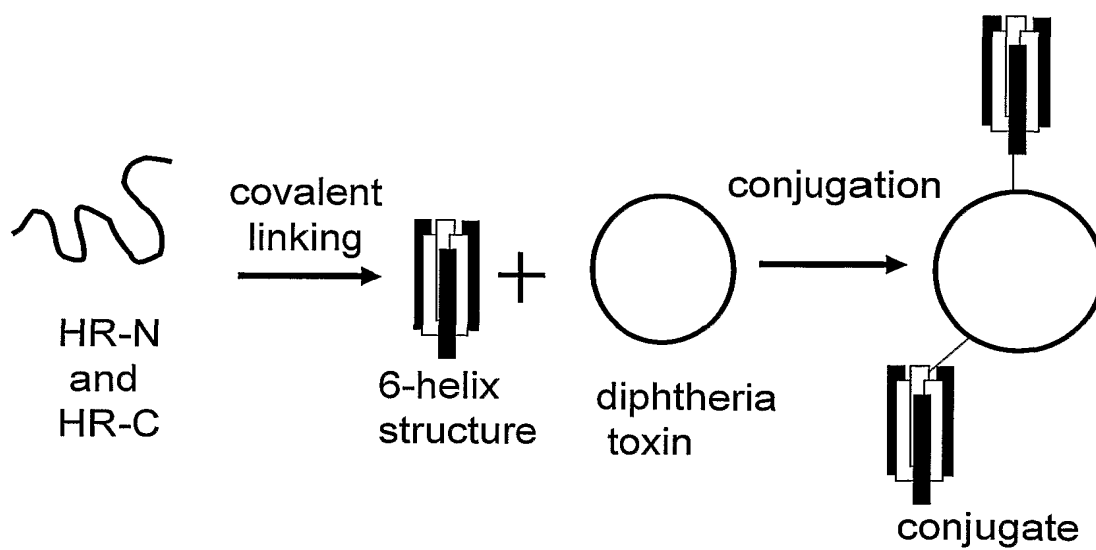


FIG. 16B

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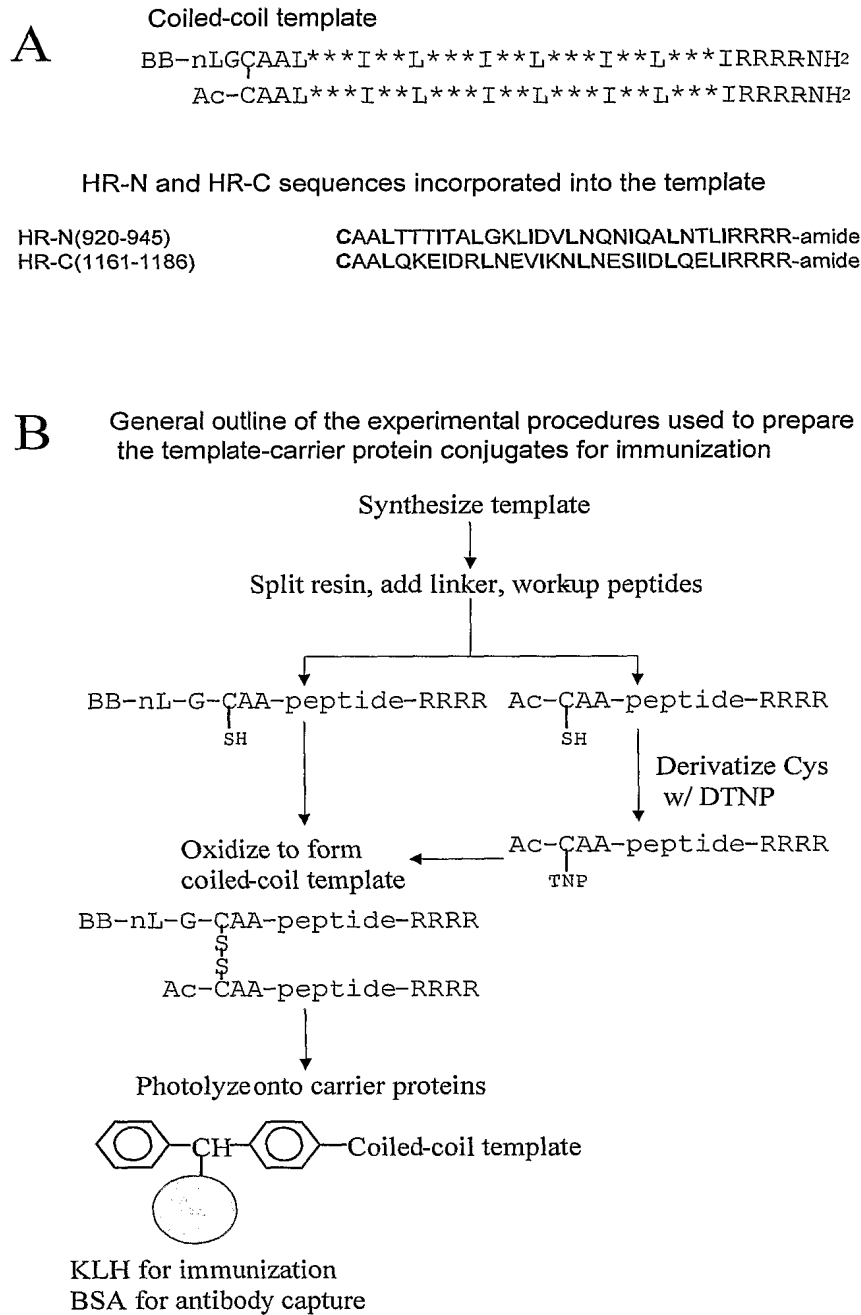


FIG. 17

HR-N peptides, HR-N1 to HR-N17.

Nucleotide sequences for SARS peptides. The amino acid region is shown in brackets.

HR-N1 (882-973)

ATGCAAATGGCATATAGGTTCAATGGCATTGGAGTTACCCAAAATGTTCTCTATGAGAACCA
AAAACAAATCGCCAACCAATTTAACAAGGCGATTAGTCAAATTCAAGAATCACTTACAACAA
CATCAACTGCATTGGGCAAGCTGCAAGACGTTGTTAACCAGAATGCTCAAGCATTAACACA
CTTGTTAAACAACCTTAGCTCTAATTTTGGTGCAATTTCAAGTGTGCTAAATGATATCCTTTC
GCGACTTGATAAAGTCGAGGCGGAGGTA

HR-N2 (916-973)

ATTCAAGAATCACTTACAACAACATCAACTGCATTGGGCAAGCTGCAAGACGTTGTTAACCA
GAATGCTCAAGCATTAACACACTTGTTAAACAACCTTAGCTCTAATTTTGGTGCAATTTCAA
GTGTGCTAAATGATATCCTTTCGCGACTTGATAAAGTCGAGGCGGAGGTA

HR-N3 (927-973)

TTGGGCAAGCTGCAAGACGTTGTTAACCAGAATGCTCAAGCATTAACACACTTGTTAAACA
ACTTAGCTCTAATTTTGGTGCAATTTCAAGTGTGCTAAATGATATCCTTTCGCGACTTGATA
AAGTCGAGGCGGAGGTA

HR-N4 (974-1011)

CAAATTGACAGGTTAATTACAGGCAGACTTCAAAGCCTTCAAACCTATGTAACACAACAACCT
AATCAGGGCTGCTGAAATCAGGGCTTCTGCTAATCTTGCTGCTACTAAAATG

HR-N5 (882-916)

ATGCAAATGGCATATAGGTTCAATGGCATTGGAGTTACCCAAAATGTTCTCTATGAGAACCA
AAAACAAATCGCCAACCAATTTAACAAGGCGATTAGTCAAATT

HR-N6 (888-922)

TTCAATGGCATTGGAGTTACCCAAAATGTTCTCTATGAGAACCAAAAACAAATCGCCAACCA
ATTTAACAAGGCGATTAGTCAAATTCAAGAATCACTTACAACA

HR-N7 (895-929)

CAAATGTTCTCTATGAGAACCAAAAACAAATCGCCAACCAATTTAACAAGGCGATTAGTCA
AATTCAAGAATCACTTACAACAACATCAACTGCATTGGGCAAG

FIG. 18A

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HR-N8 (902-936)

CAAAAACAAATCGCCAACCAATTTAACAAGGCGATTAGTCAAATTCAGAATCACTTACAAC
AACATCAACTGCATTGGGCAAGCTGCAAGACGTTGTTAACCAG

HR-N9 (909-943)

TTTAACAAGGCGATTAGTCAAATTCAGAATCACTTACAACAACATCAACTGCATTGGGCAA
GCTGCAAGACGTTGTTAACCAGAATGCTCAAGCATTAACACA

HR-N10 (916-950)

ATTCAAGAATCACTTACAACAACATCAACTGCATTGGGCAAGCTGCAAGACGTTGTTAACCA
GAATGCTCAAGCATTAACACACTTGTAAACAACCTAGCTCT

HR-N11 (923-957)

ACATCAACTGCATTGGGCAAGCTGCAAGACGTTGTTAACCAGAATGCTCAAGCATTAACAC
ACTTGTAAACAACCTAGCTCTAATTTTGGTGCAATTTCAAGT

HR-N12 (931-965)

CAAGACGTTGTTAACCAGAATGCTCAAGCATTAACACACTTGTAAACAACCTAGCTCTAA
TTTTGGTGCAATTTCAAGTGTGCTAAATGATATCCTTTCGCGA

HR-N13 (938-972)

GCTCAAGCATTAACACACTTGTAAACAACCTAGCTCTAATTTTGGTGCAATTTCAAGTGT
GCTAAATGATATCCTTTCGCGACTTGATAAAGTCGAGGCGGAG

HR-N14 (945-979)

GTAAACAACCTAGCTCTAATTTTGGTGCAATTTCAAGTGTGCTAAATGATATCCTTTCGCG
ACTTGATAAAGTCGAGGCGGAGGTACAAATTGACAGGTTAATT

HR-N15 (952-986)

TTTGGTGCAATTTCAAGTGTGCTAAATGATATCCTTTCGCGACTTGATAAAGTCGAGGCGGA
GGTACAAATTGACAGGTTAATTACAGGCAGACTTCAAAGCCTT

HR-N16 (959-993)

CTAAATGATATCCTTTCGCGACTTGATAAAGTCGAGGCGGAGGTACAAATTGACAGGTTAAT
TACAGGCAGACTTCAAAGCCTTCAAACCTATGTAACACAACAA

HR-N17 (966-1000)

CTTGATAAAGTCGAGGCGGAGGTACAAATTGACAGGTTAATTACAGGCAGACTTCAAAGCCT
TCAAACCTATGTAACACAACAACTAATCAGGGCTGCTGAAATC

FIG. 18B

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HR-C peptides, HR-C1 to HR-C4

Nucleotide sequences for SARS peptides. The amino acid region is shown in brackets.

HR-C1 (1147-1185)

GATGTTGATCTTGGCGACATTT CAGGCATTAACGCTTCTGTCGTCAACATTCAAAAAGAAAT
TGACCGCCTCAATGAGGTCGCTAAAAATTTAAATGAATCACTCATTGACCTTCAAGAATTG

HR-C2 (1165-1185)

ATTGACCGCCTCAATGAGGTCGCTAAAAATTTAAATGAATCACTCATTGACCTTCAAGAATT
G

HR-C3 (1158-1185)

GTCGTCAACATTCAAAAAGAAATTGACCGCCTCAATGAGGTCGCTAAAAATTTAAATGAATC
ACTCATTGACCTTCAAGAATTG

HR-C4 (1151-1185)

ATTT CAGGCATTAACGCTTCTGTCGTCAACATTCAAAAAGAAATTGACCGCCTCAATGAGGT
CGCTAAAAATTTAAATGAATCACTCATTGACCTTCAAGAATTG

Amino acid sequence for SARS peptide HR-C1

HR-C1 (1147-1185)

DLGDISGINASVVNIQKEIDRLNEVAKNLNESLIDLQEL

FIG. 19

HR-N

Nucleotide sequences for SARS peptides. The amino acid region is shown in brackets.

HR-N (882-1011)

ATGCAAATGGCATATAGGTTCAATGGCATTGGAGTTACCCAAAATGTTCTCTATGAG
AACCAAAAACAAATCGCCAACCAATTTAACAAGGCGATTAGTCAAATTCAGAATCACTTAC
AACAAACATCAACTGCATTGGGCAAGCTGCAAGACGTTGTTAACCAGAATGCTCAAGCATTAA
ACACACTTGTTAAACAACCTTAGCTCTAATTTTGGTGCAATTTCAAGTGTGCTAAATGATATC
CTTTCGCGACTTGATAAAGTCGAGGCGGAGGTACAAATTGACAGGTTAATTACAGGCAGACT
TCAAAGCCTTCAAACCTATGTAACACAACAACCTAATCAGGGCTGCTGAAATCAGGGCTTCTG
CTAATCTTGCTGCTACTAAAATG

FIG. 20

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ATGTTTATTTTCTTATTATTTCTTACTCTCACTAGTGGTAGTGACCTTGACCGGTGCACCACTTTTGATG
ATGTTCAAGCTCCTAATTACACTCAACATACTTCATCTATGAGGGGGTTTACTATCCTGATGAAATTTT
TAGATCAGACACTCTTTATTTAACTCAGGATTTATTTCTTCCATTTTATTCTAATGTTACAGGGTTTCAT
ACTATTAATCATACGTTTGGCAACCCTGTCATACCTTTTAAAGGATGGTATTTATTTTGCTGCCACAGAGA
AATCAAATGTTGTCCGTGGTTGGGTTTTTGGTTCTACCATGAACAACAAGTCACAGTCGGTGATTATTAT
TAACAATTCTACTAATGTTGTTATACGAGCATGTAACCTTTGAATTGTGTGACAACCCTTTCTTTGCTGTT
TCTAAACCCATGGGTACACAGACACATACTATGATATTCGATAATGCATTTAATTGCACTTTTCGAGTACA
TATCTGATGCCTTTTCGCTTGATGTTTCAGAAAAGTCAGGTAATTTTAAACACTTACGAGAGTTTGTGTT
TAAAAATAAAGATGGGTTTCTCTATGTTTATAAGGGCTATCAACCTATAGATGTAGTTCGTGATCTACCT
TCTGGTTTTTAACACTTTGAAACCTATTTTAAAGTTGCCTCTTGGTATTAACATTACAAATTTTAGAGCCA
TTCTTACAGCCTTTTCACCTGCTCAAGACATTTGGGGCAGCTCAGCTGCAGCCTATTTTGTGGCTATTT
AAAGCCAACTACATTTATGCTCAAGTATGATGAAAATGGTACAATCACAGATGCTGTTGATTGTTCTCAA
AATCCACTTGCTGAACCTCAAATGCTCTGTAAAGAGCTTTGAGATTGACAAAGGAATTTACCAGACCTCTA
ATTTACAGGGTTGTCCCTCAGGAGATGTTGTGAGATTCCCTAATATTACAACTTGTGTCTTTTGGAGA
GGTTTTTAATGCTACTAAATTCCTTCTGTCTATGCATGGGAGAGAAAAAATTTCTAATTGTGTTGCT
GATTACTCTGTGCTCTACAACCTCAACATTTTTTCAACCTTTAAGTGCTATGGCGTTTCTGCCACTAAGT
TGAATGATCTTTGCTTCTCCAATGTCTATGCAGATTCTTTTGTAGTCAAGGGAGATGATGTAAGACAAAT
AGCGCCAGGACAACTGGTGTATTGCTGATTATAATTATAAATGCCAGATGATTTTCATGGGTTGTGTC
CTTGCTTGAAGTACTAGGAACATTGATGCTACTTCAACTGGTAATTATAAATTATAGGTATCTTA
GACATGGCAAGCTTAGGCCCTTTGAGAGAGACATCTAATGTGCCTTTCTCCCTGATGGCAACCTTG
CACCCACCTGCTCTTAATTGTTATTGGCCATTAAATGATTATGGTTTTTACACCCTACTGGCATTGGC
TACCAACCTTACAGAGTTGTAGTACTTTCTTTTGAACCTTTTAAATGCACCGGCCACGGTTTGTGGACCAA
AATTATCCACTGACCTTATTAAGAACCAGTGTGTCAATTTTAAATTTAATGGACTCACTGGTACTGGTGT
GTTAACTCCTTCTTCAAAGAGATTTCAACCATTTCAACAATTTGGCCGTGATGTTTCTGATTTCACTGAT
TCCGTTTCGAGATCCTAAAACATCTGAAATATTAGACATTTACCTTGCTCTTTTGGGGGTGTAAGTGTA
TTACACCTGGAACAAATGCTTCATCTGAAGTTGCTGTTCTATATCAAGATGTTAACTGCACTGATGTTTC
TACAGCAATTCATGCAGATCAACTCACACCAGCTTGGCGCATATATTCTACTGGAAACAATGTATTCCAG
ACTCAAGCAGGCTGTCTTATAGGAGCTGAGCATGTGCACACTTCTTATGAGTGCGACATTCTTATTGGAG
CTGGCATTGTGTAGTTACCATACAGTTTCTTTATTACGTAGTACTAGCCAAAAATCTATTGTGGCTTA
TACTATGTCTTTAGGTGCTGATAGTTCAATTGCTTACTCTAATAACACCATTGCTATACCTACTAACTTT
TCAATTAGCATTACTACAGAAGTAATGCCTGTTTCTATGGCTAAAACCTCCGTAGATTGTAATATGTACA
TCTGCGGAGATTCTACTGAATGTGCTAATTTGCTTCTCCAATATGGTAGCTTTTGCACACAATAAATCG
TGCCTCTCAGGTATTGCTGCTGAACAGGATCGCAACACACGTGAAGTGTTCGCTCAAGTCAAACAAATG
TACAAAACCCCAACTTTGAAATATTTTGGTGGTTTTAATTTTTACAAATATTACCTGACCCTCTAAAGC
CAACTAAGAGGTCTTTTATTGAGGACTTGCTCTTTAATAAGGTGACACTCGCTGATGCTGGCTTCATGAA
GCAATATGGCGAATGCCTAGGTGATATTAATGCTAGAGATCTCATTGTGCGCAGAAGTTCAATGGACTT
ACAGTGTGGCCACCTCTGCTCACTGATGATGATTGCTGCCTACACTGCTGCTCTAGTTAGTGGTACTG
CCACTGCTGGATGGACATTTGGTGCTGGCGCTGCTCTCAAATACCTTTTGCTATGCAATGGCATATAG
GTTCAATGGCATTGGAGTTACCCAAAATGTTCTCTATGAGAACCACAAAACAAATCGCCAACCAATTTAAC
AAGGCGATTAGTCAAATTCAGAATCACTTACAACAACATCAACTGCATTGGGCAAGCTGCAAGACGTTG
TTAACCAGAATGCTCAAGCATTAAACACACTTGTTAAACAACCTAGCTCTAATTTTGGTGCAATTTCAAG
TGTGCTAAATGATATCCTTTTCGCGACTTGATAAAGTCGAGGCGGAGGTACAAATTGACAGGTTAATTACA
GGCAGACTTCAAAGCCTTCAAACCTATGTAACACAACAATAATCAGGGCTGCTGAAATCAGGGCTTCTG
CTAATCTTGCTGCTACTAAAATGTCTGAGTGTGTTCTTGGACAATCAAAAAGAGTTGACTTTTGTGGAAA
GGGCTACCACCTTATGTCCTTCCCACAAGCAGCCCCGCATGGTGTGCTTCTTACATGTCACGTATGTG
CCATCCCAGGAGAGGAACCTTACCACAGCGCCAGCAATTTGTCATGAAGGCAAAGCATACTTCCCTCGTG
AAGGTGTTTTTGTGTTAATGGCACTTCTTGGTTTATTACACAGAGGAACCTTCTTTTCTCCACAAATAAT
TACTACAGACAATACATTTGTCTCAGGAAATTTGTGATGTCGTTATTGGCATCATTAACAACACAGTTTAT
GATCCTCTGCAACCTGAGCTCGACTCATTCAAAGAAGAGCTGGACAAGTACTTCAAAAATCATACATCAC
CAGATGTTGATCTTGGCGACATTTCAGGCATTAAACGCTTCTGTCTGTCATCAACATTCAAAAAGAAATTGACCG
CCTCAATGAGGTGCTAAAAATTTAAATGAATCACTCATTGACCTTCAAGAATTGGGAAAATATGAGCAA
TATATTAAATGGCCTTGGTATGTTTGGCTCGGCTTCATTGCTGGACTAATTGCCATCGTCATGGTTACAA
TCTTGCTTTGTTGCATGACTAGTTGTTGCAGTTGCCTCAAGGGTGCATGCTCTTGTGGTTCTTGCTGCAA
GTTTGATGAGGATGACTCTGAGCCAGTTCTCAAGGGTGTCAAATTACATTACACATAA

FIG. 21

HR-C Native (SEQ ID NO:48).

1150	1161	1171	1181
DISGINASVVN	I QKEIDRLNE	VAKNLNESLI	DLQEL
ga d a d	a d	a d a	d

HR-C Analogue 1 (SEQ ID NO:67). Modulation of the “a” residue position

1150	1161	1171	1181
DISGINASVVN	I QKEIDRLNE	V <u>I</u> KNLNESLI	DLQEL

HR-C Analogue 2 (SEQ ID NO:68). Change of Helical propensity

1150	1161	1171	1181
DISGINASVVN	I QKEI <u>A</u> RLNE	VAK<u>A</u>LNESLI	DLQEL

HR-C Analogue 3 (SEQ ID NO:69). Change of Helical propensity and modulation of “a” position

1150	1161	1171	1181
DISGINASVVN	I QKEI <u>A</u> RLNE	V <u>I</u> K <u>A</u> LNESLI	DLQEL

HR-C Analogue 4 (SEQ ID NO:70). Change of Helical propensity

1150	1161	1171	1181
DI <u>AA</u> INASV <u>AN</u>	I QKEI <u>A</u> RLNE	VAK <u>A</u> LNESLI <u>A</u>	<u>ALQAL</u>

HR-C Analogue 5 (SEQ ID NO:71). Introduction of lactam

1150	1161	1171	1181
DISGINASVVN	I QKEI <u>E</u> RLNK	VAKNLNESLI	DLQEL
	[]		

HR-C Analogue 6 (SEQ ID NO:72). Introduction of salt bridge

1150	1161	1171	1181
DISGINASVVN	I QKEI <u>E</u> RLNK	VAKNLNESLI	DLQEL

HR-C Analogue 7 (SEQ ID NO:73).

1150	1161	1171	1181
DI <u>EE</u> IN <u>KKVEE</u>	I <u>QKKIEELNK</u>	<u>KAEELNKKLE</u>	<u>ELQKK</u>

HR-C Analogue 8 (SEQ ID NO:74). Introduction of salt bridges

1150	1161	1171	1181
DISGINASV <u>VE</u>	I <u>QKKIEELNK</u>	<u>KAEELNKKLI</u>	DLQEL

FIG. 22